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Remarks

Applicants thank the Examiner for carefully considering the subject application. The above amendments and these remarks are responsive to the Office Action mailed October 18, 2006. With entry of this amendment, Claims 1-26 are pending.

In the Office action claims 1-26 are rejected under 35 USC 102(b) as being anticipated by U.S. Patent No. 5,940,262 (Archer).

Formal Matters

Claim 19 has been amended to correct a typographical error.

Double Patenting Rejection

Applicants respectfully traverse the rejection of claims 1-26 on the grounds of nonstatutory double patenting in view of U.S. Patent No. 7,036,469. Nevertheless, Applicants submit herewith a terminal disclaimer to overcome this double patenting rejection. Applicants note that the filing of a terminal disclaimer to obviate a rejection based on nonstatutory double patenting is not an admission of the propriety of the rejection, and raises neither a presumption nor estoppel on the merits of the rejection. *Quad Environmental Technologies Corp. v. Union Sanitary District*, 946 F.2d 870, 20 USPQ2d 1392 (Fed. Cir. 1991).

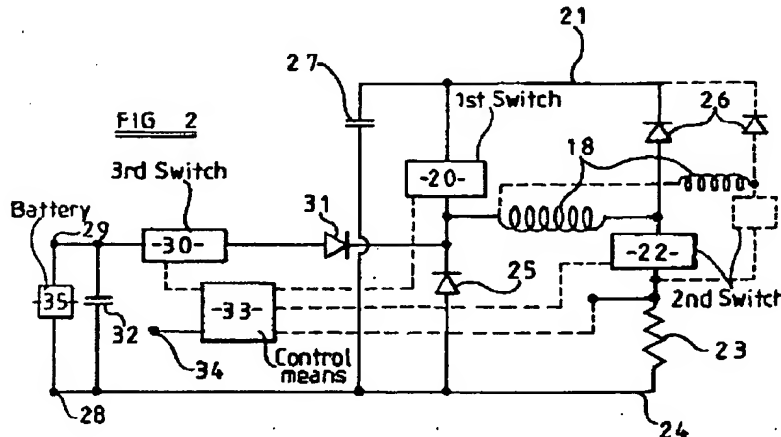
Rejections under 35 USC § 102**Claims 1 and 20**

Independent claim 1 recites, "An electronic circuit, comprising: a first electromechanical actuator coil coupled to a cylinder valve of an internal combustion engine, a second electromechanical actuator coil, where a first end of said second electromechanical actuator coil is coupled to a common reference with a first end of said first electromechanical actuator coil; a first energy storage device, where a first end of said first energy storage device is coupled to said

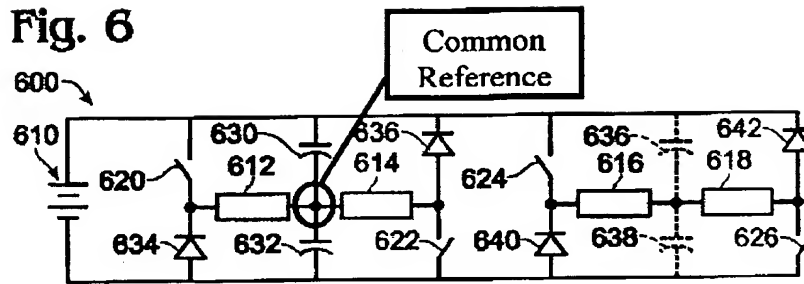
common reference; and a second energy storage device, where a first end of said second energy storage device is coupled to said common reference.”

In order to properly anticipate a claim under 35 USC 102, a single prior art reference must teach each and every claimed element. Applicants have reviewed the cited reference and can find no disclosure by Archer of first and second electromechanical actuator coils and first and second energy storage devices all coupled to the same common reference.

In Figure 2 reproduced below, Archer discloses a first capacitor 27 and a second capacitor 32 connected to a common reference, negative supply line 24. However, this common reference is different from the common reference shared by the first and second windings 18. In contrast to Archer, Applicants’ circuit layout shows that the first and second electromechanical coils and the first and second energy storage devices all are coupled to the same common reference highlighted in Applicants’ Fig. 6 reproduced below.



Archer Fig. 2

Applicants' Fig. 6

Moreover, the Office action admits that the capacitor does not share a common reference with the winding. Specifically, it states at page 4:

where a first end of said second energy storage device is coupled to said common reference [Fig. 2; The first end of said capacitor 32 is coupled to the common reference via diode 31].

Capacitor 27 is not, in fact, coupled to the common reference, but instead, is coupled to one end of diode 31. Further, the other end of capacitor 27 is connected to switch 20. As such, Archer does not disclose each and every element as claimed in independent 1.

Furthermore, independent claim 1 recites, among other features, "An electronic circuit, comprising: a first electromechanical actuator coil coupled to a cylinder valve of an internal combustion engine,"

In contrast, Archer does not disclose a first electromechanical actuator coil coupled to a cylinder valve of an internal combustion engine. Rather, Archer discloses an electromagnetic device for operating a fuel control valve forming part of the fuel system (*See claim 1*). Applicants' claim 1 is directed to controlling actuation of intake and/or exhaust valves of a cylinder, whereas Archer provides fuel valve control.

Accordingly, Applicants respectfully request the rejection of independent claim 1 be withdrawn for at least the above presented reasons. Applicants have amended independent claim 20 to include similar features of independent claim 1. Further, Applicants have amended claims 24 and 25 to follow the amendment of claim 20. Thus, the remarks directed to independent claim 1 also apply to independent claim 20. Therefore, Applicants respectfully request the rejection of independent claim 20 be withdrawn for at least the same reasons. Claims 2-8 depend directly or indirectly from independent claim 1 and claims 21-26 depend directly from independent claim 20. Thus, Applicants respectfully request the rejection of these claims be withdrawn for at least the same reasons.

Claim 9

Independent claim 9 has been amended to recite, "A system, comprising: a dual-coil half bridge converter adapted to be coupled to a single or multiple coil actuator of a cylinder valve, the cylinder valve in an internal combustion engine, the converter having a first and second capacitor and a voltage source, with at least one end of each of the first and second capacitors coupled to a common reference, the converter actuated via switches to individually energize coils in said dual coil actuator, wherein at least one end of said actuator is coupled to said common reference."

As discussed above, Archer does not disclose a first and second capacitor with at least one end of the first and second capacitor coupled to a common reference and wherein at least one end of the coils are coupled to the common reference. Rather, Archer discloses two capacitors connected via a common reference that is different from a common reference where two coil actuators are connected.

Furthermore, as discussed above, Archer does not disclose a coil actuator of a cylinder valve as claimed by Applicants. Rather, Archer discloses an electromechanical device for controlling fuel valves.

Accordingly, Archer does not disclose each and every element as claimed. Therefore, Applicants respectfully request the rejection of claim 9 be withdrawn for at least the above discussed reasons. Claims 10-14 depend directly or indirectly from claim 9. Thus, Applicants respectfully request the rejection of these claims be withdrawn for at least the same reasons.

Claim 15

Independent claim 15 recites, among other features, "only one actuating switch for actuating each coil in said actuator;"

In contrast, Archer does not disclose the claimed element. Rather, Archer discloses multiple switches for activating the electromechanical windings. Specifically, Archer states at column 3, lines 47-50

ction. In order to open the spill valve the switches 22 and 30 are opened and the current falls rapidly to zero and again some energy is returned to the tank capacitor.

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The configuration of Archer implements multiple switches to actuate the spill valve, whereas Applicants claim only one actuating switch for actuating each coil in the actuator.

Furthermore, as discussed above, Archer does not disclose a coil actuator of a cylinder valve as claimed by Applicants. Rather, Archer discloses an electromechanical device for controlling fuel valves.

Thus, Archer does not disclose each and every element as claimed in independent claim 15. Accordingly, Applicants respectfully request the rejection of independent claim 15 be withdrawn for at least the above discussed reasons. Claims 16-19 depend directly or indirectly

from independent claim 15. Thus, Applicants respectfully request the rejection of these claims be withdrawn for at least the same reasons.

Dependent Claims

As discussed above, Archer does not disclose each and every element of independent claims 1, 9, 15, and 20. For at least this reason the rejection of these claims should be withdrawn. Furthermore, various claims that depend from these claims include features not disclosed by Archer. For example, claims 11 and 22-25 include features directed to actuation of cylinder valves, in other words, intake and exhaust valves of a cylinder (or combustion chamber). Archer provides no disclosure of a circuit for controlling cylinder valves. Rather, Archer discloses an electromagnetic device for operating a fuel control valve forming part of the fuel system (*See claim 1*). Accordingly, Applicants respectfully request the rejection of claims 11 and 22-25 be withdrawn for at least this additional reason.


Conclusion

Based on the foregoing comments, the above-identified application is believed to be in condition for allowance, and such allowance is courteously solicited. If any further amendment is necessary to advance prosecution and place this case in allowable condition, the Examiner is courteously requested to contact the undersigned by fax or telephone at the number listed below.

Please charge any cost incurred in the filing of this Amendment, along with any other costs, to Deposit Account No. 06-1510. If there are insufficient funds in this account, please charge the fees to Deposit Account No. 06-1505.

CERTIFICATE OF FACSIMILE

I hereby certify that this correspondence is being sent via facsimile to the U.S. Patent and Trademark Office at (571) 273-8300 on January 18, 2007.



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